



# Computing Progression Framework

## Numbering system

Subject.Year.Strand.Statement

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DOMAIN: COMPUTER SCIENCE						
KEY STAGE 1						
Year 2						
Sub-strand	Progression statement	What to look for guidance (Working towards expectations)	What to look for guidance (Meeting expectations)	What to look for guidance (Exceeding expectations)	Relevant <i>Switched on Computing</i> unit(s)	<i>Switched on Computing</i> badge
Problem solving	C.2.1.1. Understand what algorithms are.	<p>The child can understand <b>algorithms</b> as <b>sequences</b> of instructions in everyday contexts.</p> <p>The child can recognise common <b>sequences</b> of instructions as examples of <b>algorithms</b>. These might include simple recipes, but might also be procedures followed in class, instructions for moving around the school or simple arithmetic operations.</p> <p><i>(E.g. In 2.1, recognise directions as an algorithm. In 2.3, think of the steps to taking and editing photographs as an algorithm.)</i></p>	<p>The child can understand <b>algorithms</b> as <b>sequences</b> of instructions or sets of rules in everyday contexts.</p> <p>The child can recognise that common <b>sequences</b> of instructions or sets of rules can be thought of as <b>algorithms</b>. Examples could include recipes, but might also be procedures or rules in class, spelling rules, simple arithmetic operations or number patterns.</p> <p><i>(E.g. In 2.1, recognise sets of directions as algorithms. In 2.2, recognise that the rules of a game are an algorithm. In 2.3, think of the steps to taking and editing photographs as an algorithm.)</i></p>	<p>The child can appreciate that some <b>algorithms</b> are more efficient than others.</p> <p>The child can think about everyday <b>algorithms</b>, such as classroom rules or procedures, or arithmetic operations, and look for easier or faster ways to get things done. The child can create <b>programs</b> for computers and look for other ways to do the same thing, deciding which way would be better.</p> <p><i>(E.g. In 2.1, look for more efficient ways to solve the problem. In 2.2, consider how other rules would make these games better or worse. In 2.4, think of other ways the project could be carried out more efficiently.)</i></p>	2.1, 2.2, 2.3	Problem solver 1
	C.2.1.2. The child can understand how algorithms are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions.	<p>The child can <b>program</b> floor turtles using <b>sequences</b> of instructions to implement an <b>algorithm</b>.</p> <p>The child can create Bee Bot <b>programs</b> using <b>sequences</b> of instructions, perhaps planning these first using whiteboards or Bee Bot instruction cards. The child's programs should become longer as the year progresses.</p> <p><i>(E.g. In 2.1, create a program for their Bee Bots to solve the problems set.)</i></p>	<p>The child can program on screen using <b>sequences</b> of instructions to implement an <b>algorithm</b>.</p> <p>The child can create <b>programs</b> as <b>sequences</b> of instructions when programming on screen. Their <b>program</b> could be written using simple programming apps (such as Blue Bot or Lightbot), ScratchJr or Scratch, perhaps using pre-prepared <b>blocks</b> and <b>sprites</b> in this case.</p> <p><i>(E.g. In 2.1, program the Bee Bot and the Space Simulator to solve the problems set. In 2.2, recognise how the Scratch games implement sets of rules.)</i></p>	<p>The child can understand that the same <b>algorithm</b> can be implemented in multiple programming languages.</p> <p>The child can recognise that an <b>algorithm</b> can be implemented in more than one programming language, e.g. taking an <b>algorithm</b> written for the Bee Bot and running it on the Blue Bot app, in ScratchJr and in Scratch. The child should be able to explain some of the differences between these languages.</p> <p><i>(E.g. In 2.1, recognise that the same algorithm can be implemented using the 'human robot', the Bee Bot and the Space Simulator. In 2.2, realise that these games could be implemented using other computer systems.)</i></p>	2.1, 2.2	Problem solver 1
Programming	C.2.2.1. Create and debug simple programs.	<p>The child can create a <b>program</b> for a floor turtle.</p> <p>The child can write a <b>program</b> to control a floor turtle using a <b>sequence</b> of instructions to move it from one place to another or to trace out a simple shape or route. Expect the child's <b>programs</b> to increase in length and complexity as the year progresses.</p> <p><i>(E.g. In 2.1, create a program for the Bee Bot.)</i></p>	<p>The child can create a simple <b>program</b> on screen, correcting any errors.</p> <p>The child can create a simple <b>program</b> on screen (e.g. using the Blue Bot app, ScratchJr or with prepared <b>sprites</b> and <b>blocks</b> in Scratch) with a particular goal or purpose in mind (e.g. drawing a shape or moving a <b>sprite</b> from one place to another).</p> <p>The child can <b>debug</b> any errors in their own code.</p> <p><i>(E.g. In 2.1, create their own program for the space simulator, correcting any errors.)</i></p>	<p>The child can create more complex <b>programs</b> on screen, correcting any errors.</p> <p>The child can create more complex <b>programs</b> on screen (e.g. using ScratchJr or Scratch) with a particular goal or purpose in mind (e.g. drawing compound shapes, making a simple <b>scripted</b> animation or modifying someone else's <b>program</b>).</p> <p><i>(E.g. In 2.1, correctly complete the more complex programming challenges, such as programming the planets to move. In 2.2, remix the games provided to improve on these.)</i></p>	2.1, 2.2	Programmer 1



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Logical thinking	C.2.3.1. Use logical reasoning to predict the behaviour of simple programs.	<p>The child can give explanations for what they think a <b>program</b> will do.</p> <p>The child should explain to the teacher, or to their peers, what they think a <b>program</b> will do. This could be a <b>program</b> they or their peers have written, or it could be a familiar piece of <b>software</b> (including computer games). The child could use an audio recorder or video camera to capture their explanations.</p> <p><i>(E.g. In 2.1, predict what their own or their peers' programs will do. In 2.2, predict what happens in the games.)</i></p>	<p>The child can give logical explanations for what they think a <b>program</b> will do.</p> <p>The child can give logical explanations of what a <b>program</b> will do under given circumstances, including some attempt at explaining why it does what it does. The <b>program</b> could be one they themselves have written or it could be a computer game or a familiar piece of <b>software</b>. The child could use an audio recorder or a video camera to record their explanations.</p> <p><i>(E.g. In 2.1, give logical explanations for what their own or their peers' programs will do. In 2.2, give logical explanations for what happens in the games.)</i></p>	<p>The child can work out some of the underlying <b>algorithm</b> by experimenting with a <b>program</b> while it runs.</p> <p>The child can take a simple game or piece of application <b>software</b> and <b>reverse engineer</b> at least some of the steps or rules that were present in the underlying <b>algorithm</b>. <i>E.g. When text is selected and the B button is clicked, the text should show as bold; when lives reach zero and health drops to zero, show game over and stop the game.</i></p> <p><i>(E.g. In 2.2, experiment with the games provided and attempt to recreate the underlying algorithm, typically as a set of rules)</i></p>	2.1, 2.2	Logical thinker 1



# Computing Progression Framework

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### DOMAIN: DIGITAL LITERACY

#### KEY STAGE 1

#### Year 2

Sub-strand	Progression statement	What to look for guidance (Working towards expectations)	What to look for guidance (Meeting expectations)	What to look for guidance (Exceeding expectations)	Relevant Switched on Computing unit(s)	Switched on Computing badge
E-safety	C.2.1.1. Use technology safely and respectfully.	<p>The child can keep safe while using digital technology.</p> <p>The child should know that they need to keep themselves safe when using digital technology. E.g. They should know that not all games are suitable for children, that they should close the lid of a laptop (or similar action) if they find inappropriate images and that files attached to some emails can cause harm.</p> <p><i>(E.g. In 2.2, know that some games are not appropriate for children. In 2.4, know what to do if they encounter inappropriate content. In 2.5, know that emails and attachments cannot always be trusted.)</i></p>	<p>The child can keep safe and show respect to others while using digital technology.</p> <p>The child should know that they need to keep themselves safe when using digital technology. E.g. They should know to use filtered SafeSearch when looking for images on the <b>web</b> and that they should close the lid of a laptop (or similar action) if they find inappropriate images. They should know to respect others' rights, including privacy and intellectual property when using computers, so should not look at someone else's work or copy it without permission and acknowledgement. They should observe age restrictions on computer games.</p> <p><i>(E.g. In 2.2, observe age restrictions when playing games out of school. In 2.3, ask before taking photos of others. In 2.4, know what to do if they encounter inappropriate content; acknowledge the source of information they use. In 2.5, check that it is safe to open files attached to emails and to respond to emails. In 2.6, know not to post images with metadata to the open web.)</i></p>	<p>The child can stay safe and act respectfully and responsibly when using digital technology.</p> <p>The child should know that they need to keep themselves safe when using digital technology. E.g. They should know to use filtered SafeSearch when looking for images on the <b>web</b> and that they should close the screen (or similar action) if they find inappropriate images. They should know to respect others' rights, including privacy and intellectual property when using computers, so should not look at someone else's work or copy it without permission and acknowledgement. They should know that emails can have files attached that could harm their computer. They should know that digital photos sometimes contain hidden (meta)data that can reveal where the photo was taken. They should observe age restrictions on computer games.</p> <p><i>(E.g. In 2.2, observe age restrictions when playing games out of school and think about how long they should spend playing games. In 2.3, ask before taking photos of others and not upload these. In 2.4, know what to do if they encounter inappropriate content; acknowledge the source of information they use; only use liberally licensed media. In 2.5, check that it is safe to open files attached to emails and to respond to emails; respond appropriately. In 2.6, know not to post images with metadata to the open web.)</i></p>	2.2, 2.3, 2.4, 2.5, 2.6	E-safety 1
	C.2.1.2. Keeping personal information private.	<p>The child can understand that information on the internet can be seen by others.</p> <p>The child should be aware that information stored on the <b>web</b>, or transmitted via the internet, is available to other people. E.g. They should know that photos they take and upload can be seen by anyone who has the right username and password, by those who operate the computers on which they're stored, those running the school <b>network</b> and possibly others too.</p> <p><i>(E.g. In 2.2 and 2.6, know that photos they take and upload could be seen by others.)</i></p>	<p>The child can understand that they should not share personal information online.</p> <p>The child should understand that personal information should be kept private: it should not be posted online to a public audience and should only be shared privately with those who they (or their parents) would trust. E.g. The child should recognise that photos they take in school should not normally be posted to the open <b>web</b>. They should know that photos taken with smartphones often contain hidden information about where the photo was taken.</p> <p><i>(E.g. In 2.2 and 2.6, know that photos of themselves or other people should not normally be uploaded to the open web. In 2.6, know that photos can contain metadata revealing where they were taken.)</i></p>	<p>The child can show some understanding of broader issues around online privacy.</p> <p>The child should show some awareness of other issues around privacy. The child might discuss how digital photos can contain hidden information about where they were taken (metadata) or be searched for faces. They can show they are aware that information on computers is likely to remain available for a very long time and cannot easily be removed. They might discuss how their use of the <b>web</b>, searches and email can be monitored by those who provide the services and those who run computer <b>networks</b>, including at school.</p> <p><i>(E.g. In 2.2 and 2.6, consider metadata, facial recognition and the permanence of online information. In 2.4 and 2.5, recognise that using the web, searches and email generate metadata that records how these services have been used.)</i></p>	2.2, 2.4, 2.5, 2.6	E-safety 1
	C.2.1.3. Identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.	<p>The child can understand what to do if they see disturbing content online at home or at school.</p> <p>The child should know to close the laptop lid or turn the tablet over if they find content, such as inappropriate images, which might disturb them or other children. They should know to tell their teacher or their parents if this happens.</p> <p><i>(E.g. In 2.4 and 2.5, know to close the laptop lid or turn the tablet over and tell a teacher or their parents if they find inappropriate content.)</i></p>	<p>The child can understand what to do if they have concerns about content or contact online.</p> <p>The child should know to close the laptop lid or turn the tablet over if they find content, such as inappropriate images, which might disturb them or other children; if someone they don't trust contacts them online; if someone makes inappropriate contact online. They should know to tell their teacher or their parents if this happens, and be aware that they could talk to another trusted adult or to ChildLine about this.</p> <p><i>(E.g. In 2.4 and 2.5, know to close the laptop lid or turn the tablet over and tell a teacher, their parents, another trusted adult or ChildLine if they find inappropriate content.)</i></p>	<p>The child can have a range of strategies for dealing with concerns over content or contact online.</p> <p>The child should know to close the laptop lid or turn the tablet over if they find content, such as inappropriate images, which might disturb them or other children; if someone they don't trust contacts them online; if someone makes inappropriate contact online. They should know to tell their teacher or their parents if this happens, and be aware that they could talk to another trusted adult or to ChildLine about this. They should be aware that they can report inappropriate contact or content to those running websites, but that it would normally be best to ask a parent or teacher to help them in doing so.</p> <p><i>(E.g. In 2.1 and 2.2, know that concerns about content or comments on the Scratch website can be reported to community moderators. In 2.5, know that concerns about emails can be reported to the email service provider; be aware that email accounts can sometimes be hacked.)</i></p>	2.1, 2.2, 2.4, 2.5	E-safety 1



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**KEY STAGE 1**

**Year 2**

Sub-strand	Progression statement	What to look for guidance (Working towards expectations)	What to look for guidance (Meeting expectations)	What to look for guidance (Exceeding expectations)	Relevant Switched on Computing unit(s)	Switched on Computing badge
Using IT beyond school	C.2.2.1. Recognise common uses of information technology beyond school.	<p>The child can show an awareness of how IT is used for communication beyond school.</p> <p>The child can mention some of the ways in which IT is used to communicate beyond school. E.g. The child might know that adults can share work and discuss ideas in online communities; that photos can be shared easily using digital technology; that the <b>web</b> is made up of information shared by people and organisations; that people use email for a range of purposes and in a variety of contexts.</p> <p><i>(E.g. In 2.1 and 2.2, recognise that people can share work and discuss ideas using online communities. In 2.3, recognise that people share photographs using digital technology. In 2.4, recognise that people publish useful information on the web. In 2.5, recognise that email is used in many contexts.)</i></p>	<p>The child can show an awareness of how IT is used for a range of purposes beyond school.</p> <p>The child can name a number of purposes for which IT is used beyond school. The child might know that adults can share work and discuss ideas in online communities; that photos can be taken, edited and shared easily using digital technology; that the <b>web</b> is made up of information shared by people and organisations; that people use email for a range of purposes and in a variety of contexts; that scientists use computers when collecting and analysing <b>data</b>.</p> <p><i>(E.g. In 2.1 and 2.2, recognise that people can share work and discuss ideas using online communities. In 2.3, recognise that people take, edit and share photographs using digital technology. In 2.4, recognise that people publish useful information on the web. In 2.5, recognise that email is used in many contexts. In 2.6, recognise that scientists use a range of digital technologies when collecting and analysing data.)</i></p>	<p>The child can consider when digital technology leads to improvements or has the potential to make things worse.</p> <p>The child can take a critical stance towards technologies, considering ways in which it has improved things and balancing these with possible disadvantages. They might compare board games and computer games; digital photography with traditional film; using the library with accessing the <b>web</b>; sending a letter with sending an email.</p> <p><i>(E.g. In 2.2, compare board games and computer games. In 2.3, compare film and digital photography. In 2.4, compare using a library with the web. In 2.5, compare the post and email.)</i></p>	2.1, 2.2, 2.3, 2.4, 2.5, 2.6	



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### DOMAIN: INFORMATION TECHNOLOGY

#### KEY STAGE 1

#### Year 2

Sub-strand	Progression statement	What to look for guidance (Working towards expectations)	What to look for guidance (Meeting expectations)	What to look for guidance (Exceeding expectations)	Relevant Switched on Computing unit(s)	Switched on Computing badge
Creating content	C.2.1.1. Use technology purposefully to organise, store and retrieve digital content.	<p>The child can store and retrieve content on <b>digital devices</b>.</p> <p>With a given purpose, the child can use a range of digital technologies to retrieve and store digital content. Technologies will typically include laptop computers, tablets and smartphones with access to the internet, but the child might also be expected to use digital cameras, video cameras and audio recorders (or the equivalent apps on a tablet or smartphone). Projects might include digital photography, searching for images online and creating image-based presentation slides.</p> <p><i>(E.g. In 2.3 and 2.6, take and upload digital photographs. In 2.4, save and open presentation files. In 2.5, open files attached to emails.)</i></p>	<p>The child can store, organise and retrieve content on <b>digital devices</b> for a given purpose.</p> <p>With a given purpose, the child can use a range of digital technologies to retrieve, organise and store digital content. Technologies will typically include laptop computers, tablets and smartphones with access to the internet, but the child might also be expected to use digital cameras, video cameras and audio recorders (or the equivalent apps on a tablet or smartphone). Projects might include digital photography, searching for images online and creating image-based presentation slides.</p> <p><i>(E.g. In 2.3, review, reject and rate the photographs they have taken. In 2.4, find useful information on websites. In 2.5, save and retrieve their presentations; add images or other media as appropriate. In 2.6, use questions to sort and classify objects; take, upload and organise photographs; add information to a map.)</i></p>	<p>The child can show some understanding that different types of information are all stored in a digital format on computers.</p> <p>The child can give some explanation of how information is stored on computers and other <b>digital devices</b>, recognising that information must always be stored as <b>sequences</b> of numbers, irrespective of the original form of that information.</p> <p><i>(E.g. In 2.3, recognise that digital photographs are made of pixels. In 2.5, recognise that a database contains structured information, and that recorded audio can be attached to emails as digital information. In 2.6, recognise that digital photographs are made of pixels and sometimes contain data to show where they were taken.)</i></p>	2.3, 2.4, 2.5, 2.6	Content creator 1
	C.2.1.2. Use technology purposefully to create and manipulate digital content.	<p>The child can create original content for a given purpose using digital technology.</p> <p>For a given purpose, the child can create their own original digital content using a range of technologies. Content-creation technology might include laptop computers, tablets, smartphones with <b>network</b> connections, digital cameras, video cameras and audio recorders. Projects might include digital photography, creating image-based presentation slides, composing an email and creating simple charts. Look for some indication of the child's creativity in this work.</p> <p><i>(E.g. In 2.3, take original digital photographs. In 2.4, create their own presentation. In 2.5, write an email. In 2.6, take photographs and create charts.)</i></p>	<p>The child can create and edit original content for a given purpose using digital technology.</p> <p>The child can create and edit their own original digital content using a range of technologies. Content-creation technology might include laptop computers, tablets, smartphones with <b>network</b> connections, digital cameras, video cameras and audio recorders, although editing is likely to take place on laptops or tablets. Projects might include digital photography, creating image-based presentation slides, composing an email and creating simple charts. Look for some indication of the child's creativity in this work and evidence that they have edited content.</p> <p><i>(E.g. In 2.3, take and edit original digital photographs. In 2.4, create and edit their own presentation. In 2.5, write and edit an email. In 2.6, take and edit photographs and create and edit charts.)</i></p>	<p>The child can create and edit original content for a given purpose using digital technology and paying attention to the intended audience.</p> <p>The child can create and edit their own original digital content using a range of technologies. Content-creation technology might include laptop computers, tablets, smartphones with <b>network</b> connections, digital cameras, video cameras and audio recorders, although editing is likely to take place on laptops or tablets. Projects might include digital photography, creating image-based presentation slides, composing an email and creating simple charts. Look for some indication of the child's creativity in this work and evidence that they have edited content.</p> <p><i>(E.g. In 2.3, take and edit original digital photographs, thinking about their artistic merits. In 2.4, create, edit and deliver their own presentation, thinking about how to explain their research clearly to their audience. In 2.5, write and edit an email using language appropriate for this purpose. In 2.6, take and edit photographs and create and edit charts, thinking about how to present information most effectively.)</i></p>	2.3, 2.4, 2.5, 2.6	Content creator 1